ABSTRACT The Affordable Care Act is the most fundamental legislative transformation of the US health care system in forty years. This analysis estimates that the act will provide health insurance for an additional 3.4 million people in California in 2016. This will mean that nearly 96 percent of documented residents of California under age sixty-five will be insured. Enrollment in Medi-Cal, the state’s Medicaid program, is expected to increase by 1.7 million people, while 4.0 million people are expected to enroll in the state’s planned new health insurance exchange. Employer-sponsored insurance and spending on health insurance will decline slightly. Low-income households will experience substantial financial benefits, but families at the highest income levels will pay more.

The Affordable Care Act radically reforms insurance markets, mandates that most Americans purchase health insurance if they are not covered by their employers or publicly funded programs, and provides hundreds of billions of dollars in subsidies to make insurance more affordable. Although most of the provisions apply nationwide, the law may have very different effects in different states, depending on each state’s current distribution of insurance coverage, income, and other factors.1

The health reform law will transform the insurance market in all states. Its effects in California will be shaped by the state’s unique features, including its large number of uninsured and undocumented immigrants, who represent about one-fifth of the state’s currently uninsured population.

Given the state’s persistent budget deficit, it is particularly important to understand the impact of the law on publicly financed programs—such as Medi-Cal, California’s Medicaid program, and Healthy Families, its Children’s Health Insurance Program (CHIP)—and to estimate the size and characteristics of the population that will remain uninsured in 2016. And given the enormous impact of the recession on the state, where unemployment in 2010 exceeded 12 percent, it is especially urgent to understand the law’s effect on the budgets of low-income individuals and families who have been particularly hard hit by the economic downturn.

Study Data And Methods

MICROSIMULATION MODEL Our analysis used a proprietary microsimulation model, which allows the user to enter a set of policy parameters and measure their impact on the distribution of insurance coverage, government costs, employers’ health insurance spending and wages, and household budgets.2 The results of this model at the national level closely mirror the conclusions of the Congressional Budget Office (CBO) in its assessment of the impact of the Affordable Care Act.3 In this analysis we extrapolated those conclusions to the state level. We focused on 2016 but also examined cumulative impacts through 2019. We used data projections from the Census Bureau and the CBO to project data forward to that point.3,4

Our modeling approach is the type of microsimulation modeling used by the Treasury...
IMPACT OF HEALTH REFORM

Department, CBO, and other government entities. This approach uses the best evidence available in the health economics literature to model how individuals will respond to changes in the insurance environment induced by changes in government policy.

**Data Sources** We used the February and March 2005 Current Population Surveys (CPS) as our model’s baseline. The February survey contains information on health insurance offered by employers. The March survey contains information on family demographics, tax rates, and insurance coverage. We renormalized these data to match the distribution of insurance by age and income category from the most recent California Health Interview Survey, conducted in 2007. The people included in our analysis were under age sixty-five.

We used these data to compute, for every policy change we studied, the impact of that change on eligibility for and prices of various types of insurance. We ran these eligibility and price changes through a detailed and integrated set of behavioral equations that related them to behavioral responses by individuals, families, and firms.

**Analysis** We modeled these behavioral responses using the best available evidence from the health economics literature. To capture firms’ responses, the model used data from the CPS to create virtual firms by finding for each worker comparable workers in the Current Population Survey based on that worker’s wage, industry, firm size, and whether or not the firm offered health insurance. These virtual coworkers were grouped together into virtual firms, and the responses of those firms were modeled, based on the average effects of policies on their workforces.

For this California-specific analysis, we augmented the renormalized CPS data in three ways. First, we recalibrated them to match the totals from the 2007 California Health Interview Survey and updated them from 2007 to future years using projections provided by the CBO.3

Second, we used data from California’s unemployment insurance records to calculate the distribution of wages of workers in the state. The large data sample available for California allows the microsimulation model to estimate effects not only for the entire state, but for areas within the state as well.

We divided the state into seven areas based on its largest Metropolitan Statistical Areas: Bakersfield, Los Angeles, Riverside, Sacramento, San Diego, San Francisco, and San Jose. We added residents of other Metropolitan Statistical Areas to the nearest of the seven areas we used. We excluded from our area-specific analysis the roughly 500,000 residents of the state who are not affiliated with a Metropolitan Statistical Area because the Current Population Survey does not identify where they live.

Third, to estimate the number of people in the Current Population Survey who are undocumented immigrants, the model followed a procedure to substitute a value for missing data that was developed by researchers at the Pew Charitable Trusts. The model normalized the totals to California Health Interview Survey totals of undocumented immigrants by income.

**Limitations** It is important to recognize that these projections were based on best evidence about how people and firms have responded to past changes in the insurance environment, and to understand that reactions to the major changes occurring under health reform may be different. Two areas of uncertainty in particular should be highlighted.

The first is the effectiveness of the Affordable Care Act’s individual mandate to have health insurance. Our model assumed that the nationwide mandate will be roughly as effective as the mandate in Massachusetts—the only state to have imposed an individual mandate so far. But the results in Massachusetts might not be generalizable to the nation as a whole, or to California in particular.

The second is the reaction of employers to the broad set of changes incorporated in the Affordable Care Act. Our estimates were based on how employers responded to past changes in the price and tax treatment of insurance. However, their reactions may differ when broad market reform and large subsidies make nongroup insurance more attractive to their employees, while at the same time those employees are required to have coverage.

In Massachusetts this combination led to a rise in employer-sponsored insurance. But if some large employers react to the new situation by reducing insurance coverage, their action could start a wider trend toward reduced employer spending.

**Health Insurance Coverage In California In 2016**

**Overall Distribution of Coverage** Our model estimated that the number of uninsured people in California in 2016 would fall by 3.4 million—slightly more than half the number who would be uninsured had the Affordable Care Act not become law. Employer-sponsored insurance would fall very modestly, as increases in enrollment among those subject to the individual mandate would largely offset decreases in insurance provided by employers.
Of the people who would still be uninsured, about 40 percent would be undocumented immigrants, 36 percent would be people subject to the individual mandate who nonetheless choose to remain uninsured, 13 percent would be documented residents not subject to the mandate, and 11 percent would have had coverage but then lost it.

Exhibit 1 shows our model’s projected impact of the Affordable Care Act on insurance coverage in California in 2016, the first year when the law will be fully phased in. The most important projected change is that the number of uninsured people would fall 52 percent, from 6.5 million to 3.1 million.

Some small firms would stop offering insurance, and some employees would move from employer-sponsored insurance to subsidized alternatives, resulting in a modest erosion of employer-sponsored coverage overall. There would also be a reduction in traditional nongroup insurance, as individuals moved to the subsidized exchange, projected to cover four million people. Public insurance would grow substantially due to the individual mandate, which would expand the entitlement to anyone earning less than 133 percent of the federal poverty level, and which would require people already eligible but not enrolled to get coverage.

The effects of the health reform law would be phased in over time. Relative to the baseline before its enactment, there would be a modest reduction in the number of uninsured people in the period 2012–13, before the mandates, subsidies, and eligibility changes of the law took effect. During this same period, there will also be a modest increase in employer-sponsored insurance (Exhibit 2). The reduction prior to 2014 would be due to the implementation of the small-group tax credits, creation of California’s high-risk pool, and extension of dependent coverage to age twenty-six.

The mandates, subsidies, and eligibility changes that began in 2014 would be phased in over a three-year period. After they took full effect in 2016, our model projected that their results would remain roughly constant for as long as it can make reliable projections.

**EFFECTS ON EMPLOYER-SPONSORED COVERAGE**
The model estimated that 870,000 fewer people in California would have employer-sponsored insurance in 2016. This decline is the result of a number of changes in this type of insurance. The model projected that roughly 1.5 million people would lose employer-sponsored insurance as their firms stopped offering coverage. These firms’ employees would be heavily subsidized in the insurance exchange if they bought insurance there, but that would not be an option for them if their employers offered insurance. The model projected a drop in insurance coverage by firms with fewer than 100 employees.

At the same time, the model estimated that only a negligible number of people would be offered employer-sponsored coverage for the first time. All of them would work at the few larger firms that do not now offer coverage but would be strongly penalized by the Affordable Care Act if they did not begin offering coverage. About 500,000 people who were offered insurance by their employer would turn down that coverage, often because employee contributions would be too high. (As discussed below, some employers would respond to the new law by raising employees’ contributions to coverage.) Another 900,000 people who had previously turned down their employer-sponsored insurance would now enroll to meet the individual mandate. Finally, about 200,000 people under age twenty-six would gain coverage through a parent’s employer-sponsored insurance plan because of the law’s provisions regarding the coverage of dependents.

**EFFECTS ON THE UNINSURED**
The model pro-

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**EXHIBIT 1**

Projected Changes In Insurance Coverage In California By 2016 As A Result Of The Affordable Care Act

<table>
<thead>
<tr>
<th>Type of coverage</th>
<th>Without the law</th>
<th>With the law</th>
<th>Impact of the law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer-sponsored</td>
<td>18.90</td>
<td>18.03</td>
<td>-0.87</td>
</tr>
<tr>
<td>Traditional nongroup</td>
<td>2.24</td>
<td>0.87</td>
<td>-1.37</td>
</tr>
<tr>
<td>Exchange</td>
<td>0.00</td>
<td>4.01</td>
<td>4.01</td>
</tr>
<tr>
<td>Public</td>
<td>6.58</td>
<td>8.29</td>
<td>1.71</td>
</tr>
<tr>
<td>None</td>
<td>6.53</td>
<td>3.10</td>
<td>-3.43</td>
</tr>
</tbody>
</table>

**SOURCE** Authors’ analysis of data from the following sources: Agency for Healthcare Research and Quality. Medical Expenditure Panel Survey Insurance Component [Internet]. Rockville (MD): AHRQ; [cited 2010 Dec 16]. Available from: http://www.meps.ahrq.gov/mepsweb/survey_comp/insurance.jsp. Notes 3, 6, 8, and 9 in text. Notes Traditional nongroup insurance is all nongroup insurance without the law, but only insurance outside the insurance exchange with the law. Exchange is insurance through the insurance exchange. Public insurance is Medi-Cal and Healthy Families.
jected that roughly 3.8 million formerly uninsured people in California would gain coverage as a result of the law. Exhibit 3 shows the sources of insurance coverage for this group.

About 600,000 people, or one-sixth of those gaining coverage, would acquire employer-sponsored insurance. About 1.8 million, or half of the newly insured, would gain coverage through the new insurance exchange. Two-thirds of that group would be subsidized. The remainder would enroll in Medi-Cal. As a result, nearly 96 percent of the documented nonelderly residents of the state would be covered in 2016.

There would still be a sizable number of uninsured individuals in 2016, according to the model’s projections. Not only would some people who were formerly uninsured remain so, but others would lose insurance. Exhibit 3 shows that some of these changes would be due to employers’ dropping insurance coverage or requiring higher employee contributions, in reaction to provisions in the Affordable Care Act. Overall, the model projected that of the 3.1 million people without insurance in 2016, 332,000 (11 percent) would have been insured previously.

Of those who remained uninsured, the largest group (40 percent) would be the state’s undocumented residents, who are excluded from the mandate, public subsidies, and insurance exchanges. Undocumented residents would account for a disproportionate share of the uninsured in California: 19 percent, compared to 10 percent for the nation as a whole. Even with health reform, 1.24 million undocumented Californians would remain uninsured.

Another 1.52 million formerly uninsured individuals—who were not undocumented residents—would still lack coverage in 2016. Of this group, about 60 percent would not be subject to the individual mandate because the cheapest insurance option available to them would cost more than 8 percent of their income, or because their income would fall below the income tax filing threshold set for penalties under the mandate.

Exhibit 3 shows the income distribution of this
group in more detail. About half of the group would have incomes below 133 percent of the federal poverty level and below the filing threshold. Virtually none would have incomes of 133–199 percent of poverty because of the availability of heavily subsidized insurance for people in that income range. More than one-third of them would have incomes above 400 percent of poverty and thus would not be subsidized.

The remaining group of about 660,000 people would consist of those who chose not to purchase insurance even though they were subject to the mandate. This population would be fairly evenly distributed across the income groups.

**Local Variation Within California** The model projected substantial variation in these effects of the Affordable Care Act in different areas of the state. Los Angeles would account for about half of the reduction in the uninsured population. San Diego would have the largest percentage reduction in those lacking insurance, and this area would be the only one with a rise in employer-sponsored insurance. In contrast, Sacramento would have the largest proportional reduction in employer-sponsored insurance (about 10 percent) and the smallest reduction in the uninsured population (less than 47 percent).

Immigration status is a key factor in the projections of the remaining number of uninsured people in the seven different areas of California. In three areas—Los Angeles, San Francisco, and San Jose—the largest group of those remaining uninsured would be undocumented residents. In Los Angeles, almost half of the people still uninsured in 2016 would be undocumented.

Interestingly, the two areas where there would be the largest proportional reduction in the uninsured population—Riverside and San Diego—are also the two areas with the smallest number of uninsured individuals who would be exempt from the mandate. Clearly, the reach of the mandate will be a key determinant of its success in increasing insurance coverage.

**Effects on Health Insurance Spending** Our model projected that employer spending on health insurance would fall in the aggregate, reflecting a decline in spending by small employers and a rise in spending by larger employers. Overall, there would be roughly a 6 percent reduction in health insurance spending by employers in 2016.

This reflects two changes. Employer-sponsored insurance coverage would fall by 870,000 people, or about 4.6 percent of the baseline employer coverage. And employers would increasingly shift the cost of health insurance to their employees, which would further decrease employers’ spending. There would be a substantial reduction in employer-sponsored insurance spending among firms with fewer than 100 employees. Reduced employer spending on insurance would be less pronounced for firms with 100–999 employees. Finally, there would be an increase in coverage and spending in firms with more than 1,000 employees.

**Effects on Household Budgets** The model projected that the Affordable Care Act would have a variety of effects on household budgets. Some California households would see sizable new costs, as a result of higher taxes and contributions toward insurance. Other households would see sizable benefits, as a result of higher wages—as explained below—and new subsidies for buying insurance through the exchange.

People who were formerly uninsured would have lower out-of-pocket medical costs and could receive exchange subsidies or become eligible for Medicaid. People who formerly bought insurance on their own or through an employer but who would be getting government subsidies for insurance could pay less for coverage. Those who moved to more or less generous benefit designs would see changes in their out-of-pocket spending. Those whose employers reduced their contribution to coverage would face higher premiums.

Our model assumed that reduced employer spending on insurance would lead to higher employee wages, but those wages would be taxed. The model projected that higher Medicare payroll tax payments by higher-income households would be a major source of financing for the Affordable Care Act’s provisions.

There would be reductions in employee contributions toward employer-sponsored insurance and out-of-pocket spending. However, these reductions would be more than offset by higher spending on nongroup premiums and additional tax payments, for an aggregate cost to households in California of $7.8 billion in 2016 (Exhibit 4).

At the same time, there would be a very large increase—$4.8 billion—in wages, as a result of the reduction in employer-sponsored insurance spending discussed above. The federal government would pay $4.4 billion to formerly uninsured state residents in exchange tax credits. And the federal and state governments together would spend $3.4 billion more in providing public insurance to formerly uninsured residents.

Thus, the total gross benefit that California households collectively would receive as a result of the Affordable Care Act would be $12.6 billion, we projected. That amount includes the $4.8 billion in increased wages that would go directly to the households.

The final column of Exhibit 4 shows results per
household. The model projected that the typical California household would gain $280 in 2016 as a result of the Affordable Care Act.\footnote{Authors’ analysis of data from the following sources: Agency for Healthcare Research and Quality Medical Expenditure Panel Survey Insurance Component (see Exhibit 1 Sources). Notes 6 and 8 in text. Notes ESI contribution is the employee share of costs for employer-sponsored insurance. Traditional nongroup is all nongroup insurance without the law, but only insurance outside the insurance exchange with the law. Exchange subsidies are federal subsidies for insurance purchased through the insurance exchange. Public insurance is Medi-Cal and Healthy Families. For costs, positive numbers indicate increased costs and negative numbers indicate savings. Parts may not equal totals because of rounding.}

California households overall would lose money in the early years of health reform, because the increase in Medicare payroll taxes begins before subsidy payments for the insurance exchange do. For example, the model projected a net loss per family in 2012 of $174, and of $195 in 2013. However, that trend would reverse sharply after 2014. In 2016 the benefits of health reform per household would be $280, increasing to $326 in 2019 (data not shown).

Exhibit 5 shows the projected distribution of health reform’s impacts on households in California. People with incomes below 133 percent of the federal poverty level would see no additional costs and only benefits. In fact, these individuals would see lower taxes and thus realize savings of $1,086 per household in 2016. The largest gains would accrue to those with incomes of 133–199 percent of poverty, who would see essentially no costs and a net positive impact of $5.5 billion, or almost $2,000 per family.

People whose incomes were 200–399 percent of poverty would see both costs and benefits, but benefits would be roughly double the costs. There would be both large costs and benefits for those with incomes of 400–999 percent of the poverty level. The result would be a small net negative impact, of not quite $150 per household.

Only people whose incomes were more than ten times the poverty level would experience a substantial net loss. They would see little benefit but sizable costs from the higher Medicare payroll tax. The typical household at this income level would lose more than $3,000 in 2016.

It is important to note that a $3,000 loss to a family of four earning fifteen times the poverty level would amount to less than 1 percent of their income. In comparison, a $1,086 gain to a family of four at the poverty level would amount to 5 percent of their income.

### Implementation Of Health Reform In California

Our results were generated from a simulation model that forecast the impact of the Affordable Care Act on California. The projections will help policy makers trace the law’s effects as it is implemented over the next few years and suggest how state policies might be revised or introduced to magnify the law’s positive effects and mitigate its adverse ones.

Our analysis suggests that Californians may benefit greatly through health reform’s expansion of access to health insurance and health care, including subsidies for low-income families. The law’s actual impact in California will be heavily influenced by a series of implementation decisions at the federal and state levels over the next three years.

The terms and conditions of California’s health insurance exchange, which the state legislature established in 2010, and employers’ response to the exchange will determine the future
of the health insurance marketplace. The reach and effectiveness of the individual mandate will be key factors in how many people will become insured. Finally, the state’s outreach and enrollment strategies for Medi-Cal and the exchange will be instrumental in determining how many people eligible for coverage actually enroll.

California’s persistent state budget deficit exerts financial pressure on existing state programs and staff, and it could have a negative impact on the estimates that we have presented. Therefore, these estimates represent long-term opportunities for the state that must be balanced against its short-term fiscal challenges.

Financial support for this paper was provided by the Blue Shield of California Foundation. Jonathan Gruber was a technical consultant to the US Department of Health and Human Services from March 2009 through February 2010. He has ongoing consulting work concerning health reform with a number of state governments and is an unpaid member of the board of the Commonwealth Health Insurance Connector Authority, in Massachusetts.

**NOTES**

1 The law includes other provisions that are not relevant to expanding insurance coverage, such as cuts in Medicare reimbursements to Medicare Advantage insurers and hospitals; a tax on high-cost insurance plans to begin in 2018; other cost-control reforms (this analysis follows the Congressional Budget Office in not including any effects of these reforms on health care costs in the near term); the Community Living Assistance Services and Supports (CLASS) Act provisions, which introduce a new insurance program for long-term care; and other reforms to Medicare and Medicaid.


The unauthorized immigrant population is estimated using the widely accepted residual method, in which a demographic estimate of the legal foreign-born population is subtracted from the total foreign-born population. Passel J, Cohn D. US unauthorized immigration flows are down sharply since mid-decade [Internet]. Los Angeles (CA): The Brookings Institution; [cited 2010 Dec 22]. Available from: http://pewhispanic.org/reports/report.php?ReportID=126

The model’s projection did not include cuts to Medicare or Medicaid.

This calculation excluded any costs to households attributable to changes in other financing sources, such as reductions in Medicare reimbursement or the increased tax on high-cost insurance plans that do not take effect until 2018. In addition, the model did not account for a variety of other programs that may affect household finances, such as reductions in reimbursement to Medicare providers.

ABOUT THE AUTHORS: PETER LONG & JONATHAN GRUBER

Peter Long is president and chief executive officer of the Blue Shield of California Foundation.

Gruber is a professor of economics at the Massachusetts Institute of Technology.

This paper presents estimates of insurance uptake and the distribution of health insurance across California in 2016, two years after the national health reform law has fully taken effect. The authors, Peter Long and Jonathan Gruber, have been working together since 2006 to analyze the impact of different approaches to expanding health insurance in California. More recently, to highlight issues of critical importance for policy makers, the Blue Shield of California Foundation commissioned Gruber to estimate the potential impacts of the Affordable Care Act on California. The results proved so interesting that Long decided to collaborate with Gruber to share the findings with a national audience.

At the foundation, where he began as president and chief executive officer (CEO) in July 2010, Long is committed to maximizing the expansion of state and federal programs, maintaining the state’s safety net for its poor residents despite the severe budgetary pressures in California, and participating in and shaping the post–health reform landscape. For him, “the challenge is: Exactly how do you take the national framework we’ve been given and translate it to reality so you really do have meaningful change?”

The article is very timely as the governorship of California changes hands (and political parties). Long adds that in highlighting some key issues such as the individual mandate and Medi-Cal outreach and enrollment, the article could also serve “as a road map for the continued implementation of the new [health reform] law.”

Long has an extensive history in foundation work and population health, having served as the director of the Indian Health Center of Santa Clara Valley, in San Jose, California; the legislative analyst for the National Progressive Primary Health Care Network, in Cape Town, South Africa; and, most recently, senior vice president for executive operations at the Kaiser Family Foundation. Long has a master’s degree in health policy from Johns Hopkins University and a doctorate in health services from the University of California, Los Angeles.

Gruber is a professor of economics at the Massachusetts Institute of Technology, where he has taught since 1992. He also serves as the director of the Health Care Program at the National Bureau of Economic Research. Gruber’s research focuses on public finance and health economics, and he has been deeply involved in advising Democratic candidates on health care. Gruber served in the Clinton administration as deputy assistant secretary for economic policy at the Treasury Department, during 1997–98, and he was a consultant to Barack Obama’s presidential campaign in 2008. He is also a member of the board of Massachusetts’ Commonwealth Health Insurance Connector Authority and played a key role in that state’s reforms. Gruber’s doctorate in economics is from Harvard University.
Errata

LONG ET AL., JANUARY 2011, P. 66, P. 69 Exhibits 3 and 5 in this paper contained errors. In Exhibit 3, the pie charts illustrating poverty-level breakdowns of people remaining uninsured were inadvertently transposed. Under the segment “Documented, not subject to mandate,” 34% were at or above 400% of poverty; 14% were at 200–399% of poverty; 4% were at 133–199% of poverty; and 48% were below 133% of poverty. Under the segment “Subject to mandate, choose not to insure,” 18% were at or above 400% of poverty; 32% were at 200–399% of poverty; 24% were at 133–199% of poverty; and 27% were below 133% of poverty. In Exhibit 5, the legend for the y axis should have read “Dollars (millions),” and the individual dollar amounts in each section have been removed. Both exhibits have been corrected online. The authors and Health Affairs regret any inconvenience these errors may have caused.

GIBSON ET AL., JANUARY 2011, P. 105 Exhibit 3 in this article had several errors. First, the blue and red bars were inadvertently transposed. Bars representing “VBID plus DM” should have been blue, according to the legend. Bars representing “DM, no VBID” should have been red, according to the legend. In addition, the legend for the y axis should have read 0.00, 0.15, 0.30, 0.45, 0.60, 0.75. The exhibit has been corrected online. The authors and Health Affairs regret any confusion these errors may have caused.